



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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MEMORANDUM TO: Project Engineers
Project Design Engineers
FROM: T. V. Rountree, P. E.
State Bridge Design Engineer
DATE: February 29, 2000
SUBJECT: CORROSION POLICY

As a result of ongoing research regarding the effects of mineral and chemical admixtures on the permeability and therefore long term durability of concrete, the refinements below are now included in the corrosion policy of the Structure Design Unit. These revisions are intended to provide cast-in-place concrete with a service life comparable to that of the precast elements.

- For structures located in the highly corrosive area of the State, including those structures in corrosive areas with any portion located less than 15 ft. (4.5 m) above mean high tide, substructure cast-in-place concrete shall contain 3.0 gal./yd.³ (14.9 liters/m³) of calcium nitrite corrosion inhibitor. Place the following note on the General Drawing:

Class AA concrete shall be used in all cast-in-place columns, bent caps, pile caps, and footings, and shall contain calcium nitrite corrosion inhibitor. For Calcium Nitrite Corrosion Inhibitor, see Special Provisions.

- For those structures in the highly corrosive area of the State, 5% of the portland cement shall be replaced with silica fume in those elements of the structure that may undergo repeated wetting and drying cycles. In these instances, also include the following note on the General Drawing.

The concrete in the (columns, bent caps, pile caps, footings, and/or piles) of Bent No. ____ shall contain silica fume. For Silica Fume, see Special Provisions.

If precast elements require silica fume, also include the above note on the applicable precast element sheet or standard drawing.

- For structures in Divisions 5, 7, and 9 through 14, the bridge deck concrete shall contain fly ash or ground granulated blast furnace slag. Place the following note on the General Drawing:

The Class AA concrete in the bridge deck shall contain fly ash or ground granulated blast

furnace slag at the substitution rate specified in Article 1024-1 and in accordance with Articles 1024-5 and 1024-6 of the Standard Specifications. No additional payment will be made for this substitution as it is considered incidental to the cost of the Reinforced Concrete Deck Slab.

- Due to concerns regarding the potential for galvanic cell corrosion of un-coated prestressing strands in the presence of epoxy coated mild reinforcing steel, the mild reinforcing steel in all prestressed piles and girders shall no longer be epoxy coated.
- As a clarification of current policy, in highly corrosive areas, or corrosive areas where any portion of a cast-in-place concrete member is less than 15 ft. (4.5 m) above mean high tide, all bar supports in that member and all like members shall be epoxy coated. Place the following note on the General Drawing:

All bar supports used in the (barrier rail, parapet, sidewalk, deck, bent caps, columns, pile caps, footings) shall be epoxy coated in accordance with the Standard Specifications.

This policy is effective with the June 2000 letting. The Design Manual and Special Provisions will be revised at a later date.

TVR/RDR/



[Back to Structures Main Page](#)

Last Updated: 02/29/2000 by: Randy Bissette

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